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FEDERAL SPECIFICATION

PADLOCK, CHANGEABLE COMBINATION (RESISTANT TO OPENING BY MANIPULATION AND SURREPTITIOUS ATTACK)

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE

1.1 Scope. This specification covers changeable combination padlocks designed to conform to the standards for security equipment as set forth in the "National Security Council Directive Governing the Classification, Downgrading, Declassification and Safeguarding of National Security Information." The padlocks are required to resist opening by manipulation and surreptitious techniques for the periods of time specified in 3.8. The padlocks are intended for use as indicated in 6.1. The padlocks are not tested for forced opening.

1.2 Classification. The padlocks shall be of the type and classes specified (see 6.2).

1.2.1 Type

Type DE - Combination dial design (exposed shackle)

1.2.2 Classes

Class 1 - Thirty minutes resistance to opening by radiographic techniques
Class 2 - No requirement for protection against radiographic techniques

AMSC N/A FSC 5340

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

2. APPLICABLE DOCUMENTS

2.1 Government publications.

2.1.1 The following documents, of the issues in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein.

Federal Specifications

QQ-Z-363 - Zinc-Base Alloy; Die Casting
UU-P-553 - Paper, Wrapping Tissue
PPP-B-566 - Boxes, Folding, Paperboard
PPP-B-585 - Boxes, Wood, Wirebound
PPP-B-591 - Boxes, Shipping, Fiberboard, Wood-Cleated
PPP-B-601 - Boxes, Wood, Cleated-Plywood
PPP-B-621 - Boxes, Wood, Nailed and Lock-Corner
PPP-B-636 - Boxes, Shipping, Fiberboard
PPP-B-640 - Boxes, Folding, Fiberboard, Corrugated, Triple-Wall
PPP-B-665 - Boxes, Paperboard, Metal Edged, and components
PPP-B-676 - Boxes, Setup

Federal Standards

FED-STD-123 - Marking for Domestic Shipment (Civil Agencies)
FED-STD-376 - Preferred Metric Units for Government use by the Federal Government

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(Single copies of this specification and other Federal specifications and commercial item descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Houston, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.

(Federal Government activities may obtain copies of Federal Specification documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specification

MIL-L-10547 - Liners, Case and Sheet, Overwrap, Water-Vaporproof, Flexible

Military Standards

MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes
MIL-STD-129 - Marking for Shipment and Storage
MIL-STD-810 - Environmental Test Methods

(Copies of military specifications and standards required by contractors in connection with specific acquisition functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted shall be those listed in the issue of the DODISS specified in the solicitation. Unless otherwise specified, the issues of the documents not listed in the DODISS shall be the issue of the non-Government documents which is current on the date of the solicitation.

American Society for Testing and Materials (ASTM)

D3951 - Practice for commercial packaging.
F883 - Standard Performance Specification for Padlocks

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

2.3 Order of precedence. In the event of a conflict between the text of this specification and the references cited herein (except for associated detail specifications, specifications sheets or MS standards), the text of this specification shall take precedence. Nothing in this specification, however, shall supersede applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Padlock samples.

3.1.1 Bid samples. Unless otherwise specified (see 6.2), each bidder shall furnish, with the bid, 10 sample units they propose to furnish under the contract for inspection as specified (see 4.3.1.1). One unit of the selected product shall be kept by the testing agency and one returned to the selected bidder to be used as a guide in manufacturing the first article and production quantity (see 3.1.2). Deviation is not acceptable without formal written approval from the contracting officer. The terms unit shall herein after mean a completely assembled padlock with associated tools, parts, and instructions.

3.1.2 First article. Unless otherwise specified (see 6.2), 7 units shall be furnished for first article test and approval (see 4.4.1, 4.4.3, and 6.3). If the requirements for bid samples is waived, 10 padlocks (units) shall be furnished for the first article test and approval. If a product meets requirements, one unit of the selected product shall be kept by the testing agency and one returned to the selected bidder to be used as a production sample. Deviation is not acceptable without formal written approval from the contracting officer.

3.2 Description. The padlock consists of a case or body, shackle, pin, or bolt, a dial, locking parts, means for combination changing and combination scrambling when locked. The padlock is not required to resist forced entry with tools but shall be so designed and constructed to resist the effects of normal everyday use and abuse. The padlock is intended for use indoors but must resist high temperatures (+150 degrees Fahrenheit (°F)), low temperatures (-40°F), and high humidity (80 percent relative humidity), from ship board use in Ocean Marine environment.

3.3 Materials. Materials used shall be free from defects which would adversely affect the performance of maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

3.3.1 Metal components. Unless otherwise specified, the padlock case, cover, and internal parts subject to wear, with the exception of the locking bolt and combination wheels, shall be of steel, brass, bronze, zinc alloy, or other suitable material provided the finished product withstands the tests in section 4. Combination wheels may be of any suitable material provided the finished product withstands the tests which are applicable to the class. Shackles shall be of case hardened or stainless steel, except that padlocks for shipboard use, when specified, shall have shackles of brass or bronze (see 6.2). Zinc alloy for parts shall conform to QQ-Z-363. All materials shall resist the effects of ambient heat such as an oven or similar means to a maximum temperature of 300°F for a duration of five minutes, minimum. The performance specified throughout section 3 of this specification shall not be impaired or modified by the heat (see 4.6.3.11).

3.4 Design. The design of the padlock mechanism shall preclude the changing of the combination without knowledge of the existing combination settings. Placing the shackle in the locked position shall disperse or scramble the combination to an undeterminable position. The lock mechanism shall not permit the shackle to be locked out in the open position. The locking bolt shall be guarded by not less than 3 combination wheels and a driving wheel or cam. It shall not be possible to determine the combination when the padlock is in the open position without knowledge of the existing combination. The shackle shall not spring out to the open position when the padlock is unlocked, but shall be required to be pulled to the open position. The term shackle as used herein includes a "U" shaped shackle, that passes through the locking hole of the mating halves of hasps or hasp staple. The shape of the padlock shall be at the option of the contractor, provided the assembled padlock conforms to all requirements specified herein.

3.4.1 Available combinations. The combination wheels for the padlocks shall be capable of affording at least 30,000 different, independent, usable combinations. The dialing tolerance for opening the lock shall be not more than 1/4-dial division, or number, from either side of any true dialing setting.

3.4.2 Measurement systems. Unless otherwise specified, either the U.S. Customary System of Units (US) or the International System of Units (SI) shall be used in the design and construction of the padlock. When only one system of measurement is acceptable, the particular system required shall be as specified (see 6.2). In this specification, all measurements, dimensions, sizes and capacities are given in US units. These measurements may be converted to SI units through the use of the conversion factors and methods specified in FED-STD-376.

3.5 Construction. The padlock shall be positive in its movements and functions, and the arrangement and fit of parts shall be such that it shall not be possible to insert a probing device into any opening in the case that would result in opening the padlock. The padlock shall be finished and assembled in such a manner that when in the locked condition, any penetration or spreading attempt, or the prying out or removal of component parts, including the combination dial, pushbuttons, or the back cover or any part of the lock's case shall permanently distort and visibly mark the padlock and prevent the reattachment of the components. It shall not be possible to release the shackle of the exposed shackle type lock by tension applied between the padlock shackle and case, without completely impairing the lock to an inoperable condition. The padlock shall be designed and constructed so that it cannot be opened by manipulation or surreptitious attack for a period specified in 3.8.

3.6 Dimensions. The outside dimensions across the shackle shall be of 1.5 inches $\pm$ 0.125 inch and the space under the shackle shall be of sufficient size to fasten around a 0.75 inch diameter bar. The diameter of the shackle shall be 0.3125 $\pm$ 0.0002 inches. The length of the padlock, when locked, shall be 4.125 inches maximum. The width or thickness shall not exceed 2.75 inches.

3.7 Dial face markings.

3.7.1 Dial marking. The dial face have not less than 50 depressed graduation marks. The marks and identifying numbers shall be made clearly visible and legible for running the combination setting.

3.8 Tamper resistance. The padlock shall resist opening for not less than 30 man-minutes by manipulation and 10 man-minutes by surreptitious attack when tested in accordance with 4.6.3.1 and 4.6.3.2.

3.9 Resistance to radiographic techniques. The class 1 padlock shall provide resistance to radiographic techniques for not less than 30 minutes when tested in accordance with 4.6.3.3.

3.9.1 Radiographic protection. Radiographic protection for the class 1 padlock may be provided by the composition of the materials from which its components are constructed, or may be provided by the addition of a shielding cover.

3.10 Combination change device. A key or other suitable device for changing the combination shall be furnished with each padlock. The change device, if a key shall be combinated to the series of padlocks the producer shall furnish and shall be prominently and permanently marked with a designation of the manufacturer's padlock series. The change device shall be of corrosion resistant material or have a corrosion resistant finish.

3.11 Lubrication. All moving parts of the padlock mechanism shall operate smoothly and quietly. A lubricant normally employed by the manufacturer for padlocks may be used. The bearing surface of the mechanism shall not show gummy deposits or wear sufficient to interfere with its operation after 5,000 cycles (minimum) of actual or simulated locking and unlocking and 50 (minimum) actual or simulated changes of the combination.

3.12 Finish. All parts of the padlock, other then those of non-corrosive materials, shall be protected against corrosion by electroplating or other effective methods. The shackle, if of steel, shall have an electroplated nickel finish.

3.13 Marking and serialization.

3.13.1 Back. The padlock shall be legibly marked on the back with the letters "U.S."; the manufacturer's name or Commercial and Government Entity (CAGE) code; the model number; and the classification, as follows:

For class 1 padlocks:	For class 2 padlocks:
CL 1	CL 2
FF-P-110	FF-P-110
Date: (year)	Date: (year)

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspection. The inspection requirements specified herein are classified as follows:

a. Bid sample inspection (see 4.3 through 4.3.2)
b. First article inspection (see 4.4 through 4.4.3)
c. Quality conformance inspection (see 4.5 through 4.5.3)
d. Inspection of packaging (see 4.7)

4.3 Bid sample inspection. Bid sample inspections shall be conducted by agencies as specified in the contract. Samples selection at the manufacturer's option from preproduction or standard production units from the manufacturer's current inventory.

4.3.1 Bid sample examination. Bid sample padlocks shall be examined for defects listed in table I. The presence of any critical defects, one major defect, or more than 2 minor defects among all the bid sample units shall constitute failure.

4.3.1.1 Delivery. As specified (see 3.1.1 and 6.2), bid samples shall be delivered to the test facility, transportation prepaid, furnished at no cost to the Government. Samples shall be plainly identified by securely attached durable tags, marked as follows:

Bid Sample for Test
Padlock, changeable combination
(Class Type)
Fed. Spec. FF-P-110G
Date of manufacture: (mm/yy)

4.3.2 Bid sample tests. Bid sample padlocks shall be tested in accordance with 4.6.2.2, column 1, table II. Bid sample padlocks, after testing, shall not be returned to the bidder or offeror except for one each of the padlocks selected as a production guide.

a. A test may be discontinued at the testing facility at any time the product fails to meet any one or more of the requirements of this specification. The manufacturer may be permitted to make modifications on his product during the testing phase when such modifications, in the judgement of the contracting officer and the testing facility, are clearly in the best interest of the Government.
b. In case of failure of the sample submitted, consideration will be given to the request of the manufacturer for resubmission for retest only after it has been clearly shown that changes have been made in the padlock which the Government consider sufficient to warrant retest.

3.13.1.1 Method of marking. Markings specified in 3.13.1 shall be either embossed to a height of approximately 0.018 inch or engraved to a depth of not less than 0.005.

3.13.2 Shackle marking. Each padlock shackle shall be identifiable by serialization of the lock shackle and the lock case cover as specified.

3.13.2.1 Shackle serialization. The series number identifying the shackle shall be randomly different from and have no association to the lock case cover series number. The number shall be stamped on so that it is concealed when the shackle is in the locked position. The series number shall be stamped on the shackle with a 0.094 inch die prior to the case hardening process.

3.13.2.2 Case cover serialization. The series number identifying the case cover shall be randomly different from and have no association to the lock shackle number. The number shall appear on one side of the case cover and shall be stamped on with a 0.094 inch die prior to the finish process.

3.14 Workmanship. The finished padlock shall be of substantial construction designed to withstand severe usage. Working parts shall be accurately fitted. All parts shall be well finished, true to form, and free from any defect which may affect appearance, operation, or serviceability of the padlock.

3.15 Instructions. Manufacturer's instructions normally furnished in commercial practice, describing how to run the combination and how to change the combination shall be furnished with each padlock.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items must meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of assuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling in quality conformance does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to acceptance of defective material.

4.6.1 Classification of defects. The padlocks with change keys, selected as specified, shall be examined for the following defects:

TABLE I. Classification of defects.

Classification	Defects	Requirement paragraph
Critical:		
01	Combination setting can be changed without knowledge of existing combination.	3.4
02	Does not disperse or scramble combination setting as specified.	3.4
03	Shackle can be locked out in open position.	3.4
04	Dialing tolerance not as specified. Less than 30,000 different independent combinations.	3.4.1
Major:		
101	Material not as specified.	3.2, 3.3.1
102	Dial markings not as specified.	3.4.1, 3.7.1
103	Clearance permits insertion of probes.	3.5
104	Combination change device not corrosion resistant as specified.	3.10
105	Combination change device not marked as specified.	3.10
106	Broken, split, fractured, or cracked part.	3.14
107	Functioning component is inoperative or will not operate as intended.	3.14
Minor:		
201	Finish not as specified.	3.10, 3.12
202	Lubrication not as specified.	3.11
203	Marking on back not as specified.	3.13.1
204	Marking incomplete or incorrect.	3.13.1
205	Marking method not as specified.	3.13.1.1
206	Shackle and case not serialized as specified.	3.13.2.1, 3.13.2.2,
207	Parts or components not free from burrs, splinters, or rough edges.	3.14
208	Combination setting or operation instructions missing or incomplete.	3.15

c. The manufacturer or his representative will not be permitted to observe the actual test conducted on his product at the testing facility. However, when samples tested fail to comply with the requirements of this specification, the samples may be examined by the manufacturer or his representative and full details of the failure may be made known to them in a manner which, for reasons of security, will be in the best interest of the Government.

4.4 First article inspection.

4.4.1 Sampling for first article. When a first article is required (see 3.1.2), seven sample units shall be provided for inspection. When the requirement for bid samples is waived ten units shall be provided for inspection. The first article units shall be production units manufactured using the selected bid sample guide as a production sample or standard production units from the manufacturers current inventory (see 6.3).

4.4.2 First article examination. The first article shall be examined as specified in 4.6.1. Presence of one or more critical defects shall be cause for rejection (see 3.1.2).

4.4.3 First article tests. The first article shall be subject to the tests specified in 4.6.2.2, column 2, table II. Failure of any test shall be cause for rejection (see 3.1.2).

4.5 Quality conformance inspection.

4.5.1 Sampling.

4.5.1.1 For examination. Sampling for examination shall be in accordance with MIL-STD-105, inspection level S-3. Acceptable Quality Level (AQL) shall be 2.5 percent defective for major defects and 4.0 percent for minor defects. The lot shall be units produced at the same plant, by the same process with same materials, and of the same design, all offered for delivery at one time, not to exceed 5,000 units per lot.

4.5.1.2 For tests. Padlocks shall be randomly selected from the lot submitted for acceptance in accordance with MIL-STD-105, inspection level S-3. Failure of any test shall be cause for rejection.

4.5.2 Examination. Samples selected in accordance with 4.5.1.1 shall be examined for defects as specified in 4.6.1. Presence of any critical defect shall be cause for rejection.

4.5.3 Tests. The padlocks selected in accordance with 4.5.1.2 shall be subjected to the tests specified in 4.6.2.2, column 3, table II. Tests shall be performed in the order shown.

4.6 Inspection procedure. Prior to examination and tests, padlocks shall be lubricated and, unless otherwise specified herein, all tests shall be conducted at the ambient air temperature at the test site.

4.6.3 Test procedures. For the purpose of the tests in 4.6.3.1, 4.6.3.2, and 4.6.3.6, the padlock shackle shall be fastened to a hasp secured to the top-front of a 4- or 5-drawer, steel filing cabinet.

4.6.3.1 Manipulation technique test. There shall be no limit on the number of manipulation techniques attempted and each technique may be applied for the full net working time, using the human senses amplified as necessary to unlimited types of mechanical, electric, electronic, and magnetic equipment. The tools and equipment shall be capable of being carried in a case not exceeding 1.5 cubic feet in volume and 9 inches in thickness and which do not exceed a total weight of 25 pounds (lb) (exclusive of weight of case). The padlock shall resist opening by manipulation techniques for the period of time specified in 3.8.

4.6.3.2 Surreptitious attack test. There shall be no limit on the number of surreptitious attacks attempted and each attack may be applied for the full specified time. The best method or combination of methods may be applied for the full net working time. The net working time will include time expended for any masking or repair of damage to the lock that may become necessary to obliterate evidence of penetration. Any repairs necessary to obliterate or mask evidence of attack shall be made without substitution of parts. There shall be no limitations on the time required for exploration and preparation for the test. The tools and devices used in the test will be limited to those powered by hand. The tools shall be capable of being carried in a case not exceeding 1.5 cubic feet in volume and 9 inches in thickness and which do not exceed a total of 25 lbs (exclusive of weight of case). Heat above 300°F such as that from a blow torch or an electric arc shall not be used. The padlock shall resist opening by surreptitious attach for the period of time specified in 3.8.

4.6.3.3 Radiographic test. The class 1 padlock shall be tested under the following conditions to determine resistance to opening by radiographic techniques. Portable x-ray equipment, excluding the use of isotopes, may be used. Weight of the equipment shall not exceed 75 lbs. Any radiation shielding provided for the padlock will be included in the test. The padlock shall be radiographed and resulting radiographs shall not permit opening of the padlock within the time specified in 3.9.

4.6.3.4 Direct tension test. The body of the padlock shall be held in a metal strap bearing against the outer surface of the case with a slot permitting the shackle to pass through and engage in a suitable hook or eye. A tension force of 500 lbs shall be applied slowly along the vertical centerline of the padlock so as to put a direct and equal tension in each shank of the lock shackle. The applied tension shall not damage the lock or its locking mechanism or permit opening by manipulation within the time specified in 3.8.

4.6.3.5 Jar test with tension. With a coil spring compressed between the shackle and the lock case cover to produce a force of approximately 60 lbs, the padlock shall be tested as specified in 4.6.3.6. The applied force shall not release the shackle nor permit opening by manipulation within the time specified in 3.8.

4.6.2 Tests.

4.6.2.1 Test conditions. Except as otherwise specified herein, tests shall be conducted at prevailing temperatures and humidity in the test facility.

Warning - Some tests are hazardous:

The United States Government neither assumes or accepts responsibility for any injury or damage to non-Government personnel or property that may occur during or as a result of any test required by this specification.

4.6.2.2 Test schedule. The test schedule shall be as shown in table II, in the order shown:

TABLE II. Test schedule.

Bid Samples	First Article	Quality Conformance	Test	Test Paragraph	Requirement Paragraph
1	2	3	4	5	6
X	X		Manipulation resistance.	4.6.3.1	3.5, 3.8
X	X		Surreptitious resistance.	4.6.3.2	3.5, 3.8
X	X		Radiographic opening resistance.	4.6.3.3	3.9, 3.9.1
X	X	X	Direct tension resistance.	4.6.3.4	3.5, 3.8
X	X		Jar with tension resistance.	4.6.3.5	3.5, 3.8
X	X		Jar without tension resistance.	4.6.3.6	3.5, 3.8
X	X	X	Shackle and lock strength.	4.6.3.7	3.5
X	X	X	Drop resistance.	4.6.3.8	3.5, 3.8
X	X	X	High temperature operations.	4.6.3.9	3.2
X	X	X	Low temperature operations.	4.6.3.10	3.2
X	X		High Humidity.	4.6.3.11	3.2, 3.12
X	X		Heat resistance.	4.6.3.12	3.3.1
X	X		Cycle test for wear and lubricant.	4.6.3.13	3.4.1, 3.11

4.6.3.13 Wear and lubricant test. Prior to testing, record the torque required to dial the combination for opening. After the torque is determined, perform the cycle test of ASTM F883 for 5000 cycles. Upon conclusion of the cycle test the lock shall open and lock properly when the correct combination is dialed and shall operate within 10 percent of torque required to turn the dial of the new lock. The dial tolerance for opening the lock shall not exceed the 1/4 dial division or number of 3.4.1. Upon conclusion of the cycle test, the lock shall open and close properly for each of 50 different combination changes when the proper combination is dialed. The dial tolerance for opening and the 10 percent torque variation specified above shall not be exceeded when opening and closing the lock for each of the 50 combination changes.

4.7 Inspection of preparation for delivery. An inspection shall be made to determine that the packaging, packing and marking comply with the requirements in section 5 of this specification. Defects shall be scored in accordance with table III. For examination of interior packaging the sample unit shall be one shipping container fully prepared for delivery, selected at random just prior to the closing operations. Sampling shall be in accordance with MIL-STD-105. Defects of closure listed shall be examined on shipping containers fully prepared for delivery. The lot size shall be the number of shipping containers in end item inspection lot. The inspection level shall be S-2 with an AQL of 4.0 defects per hundred units.

TABLE III. Classification of preparation for delivery defects.

Examine	Defects
Markings (exterior and interior)	Omitted, incorrect, illegible, improper size, location, sequence, or method of application.
Materials	Any component missing or damaged.
Workmanship	Inadequate application of components such as incomplete closure of container flaps, loose strapping, inadequate stapling. Distortion of container.

5. PREPARATION FOR DELIVERY

5.1 Preservation and packaging. Preservation and packaging shall be level A or C as specified (see 6.2).

5.1.1 Level A.

5.1.1.1 Unit packaging. Each padlock with instructions shall be wrapped with material conforming to UU-P-553 and packed in a close-fitting box conforming to PPP-B-566, style II, type A, class a, PPP-B-665 style B or PPP-B-676, type I.

4.6.3.6 Jar test without tension. The padlock shall be fastened to a filing cabinet as specified in 4.6.3. The lock case shall be held loosely with one hand and the padlock shall be struck with a substantial blow, the hold on the padlock being released immediately before the blow, so as to jar the padlock forcibly against the cabinet. This procedure shall be performed not less than six times by striking the padlock from different directions. A wood, plastic, or lead mallet weighing not more than 12 ounces shall be used to deliver the blows. Such jarring blows shall not release the shackle nor permit opening by manipulation within the time specified in 3.8.

4.6.3.7 Padlock shackle test. The padlock shall be held firmly in a vise or other suitable device and sufficient tension force shall be applied between the lock shackle and the lock case until the shackle is broken or released form its case. The damage to the lock and shackle shall be to the extent specified in 3.5.

4.6.3.8 Drop test. At least two sample padlocks shall be dropped six feet to a concrete floor at least ten times. The impacts shall not damage the lock or its locking mechanism nor permit opening by manipulation within the time specified in 3.8.

4.6.3.9 High temperature operation. Subject the padlock to 150°F until the temperature throughout the padlock (5 minutes minimum) has stabilized. Perform all functions required of the padlock (lock, unlock) three times while retaining this temperature. The padlock shall perform normally as specified throughout section 3 of this specification while at this temperature (see 3.2).

4.6.3.10 Low temperature operation. Subject the padlock to -40°F until the temperature throughout the padlock (5 minutes minimum) has stabilized. Perform all functions required of the padlock (lock, unlock) three times while retaining the -40°F temperature. The padlock shall perform normally as specified throughout section 3 of this specification while at this temperature (see 3.2).

4.6.3.11 Humidity effects test. To determine resistance of the padlock to corrosion and functional degradation due to high humidity (Ocean Marine environments), conduct the environmental humidity test method 507.1, procedure IV of MIL-STD-810. After the test the padlock shall operate properly (lock and unlock). The padlock combination change capabilities shall not have been affected by the test and shall be confirmed by making three combination changes while locking and unlocking the padlock between each combination change.

4.6.3.12 Heat resistance. Suspend the padlock in an oven that is heated to 300°F. Sustain this condition for 5 minutes. Allow the unit to cool to room temperature. Operate the padlock through all functions (opening, closing, combination change). The heat shall not have modified the normal performance of the padlock (see 3.3.1).

6.2 Ordering data. Acquisition documents should specify the following:

a. Title, number, and date of this specification.
b. Type and class padlock required (see 1.2).
c. When bid samples are required (see 3.1.1).
d. When a first article is required and number required (see 3.1.2).
e. Material required for case and shackle (see 3.3.1)
f. Measurement system required (see 3.4.3).
g. Bid sample delivery point (see 4.3.1.1).
h. Packaging level required (see 5.1, 5.2, and 5.2.1).

6.2.2 Data requirements. When this specification is used in an acquisition which incorporates a DD Form 1423, Contract Data Requirements List (CDRL) and invokes the provisions of DOD Federal Acquisition Regulations (FAR) Supplement 27.410-6, the data requirements will be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved CDRL (DD Form 1423) incorporated into the contract. When the provisions of DOD FAR 27.410-6 are not invoked, the data shall be delivered in accordance with the contract requirements.

6.3 First article. When a first article inspection is required, the unit shall be tested and shall be a standard production unit from the contractor's current inventory or exactly the same as the production guide, as specified in 4.4.1. The first article shall consist of seven units or ten if bid samples are waived (see 3.1.2). The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, availability of drawings of hasps required for tests, source to purchase hasps for tests, and approval of the first article. Invitation for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. The contracting officer should contact the Assistant Program Manager for Physical Security Equipment, NCEL (Code L 56), Port Hueneme, California 93043-5003 regarding testing and disposition of the test samples.

6.4 Definition of terms used in this specification:

6.4.1 Manipulation. For the purpose of this specification, the term "manipulation" means the opening of the padlock without alteration of the physical structure or disarranging or substitution of any parts of the padlock. Ordinarily manipulation would be accomplished by movement of the dial.

6.4.2 Surreptitious attack. For the purpose of this specification, the term "opening by surreptitious attack" is defined as the opening and closing of the padlock in such a manner or by such a means as to leave no evidence of the act which would be readily descernible in normal use of the padlock.

5.1.1.2 Intermediate packaging. Twelve unit packages of padlocks of the description shall be intermediate packaged in a close-fitting box conforming to PPP-B-566, PPP-B-665, PPP-B-676, or PPP-B-636, class domestic. The fiberboard box shall be closed in accordance with the appendix to the box specification.

5.1.2 Commercial. The padlocks shall be packaged in accordance with ASTM D3951 to afford adequate protection against damage during shipment from the supplier to the initial destination.

5.2 Packing. Packing shall be level A or commercial as specified (see 6.2).

5.2.1 Level A. The padlocks in quantities as specified (see 6.2) shall be packed in a close-fitting box conforming to PPP-B-585, class 3; PPP-B-591, class II; PPP-B-601, overseas type; PPP-B-621, class 2; PPP-B-636, class weather resistant or, PPP-B-640, class 2, grade A. The wood boxes shall be provided with a case liner conforming to MIL-L-10547 and sealed in accordance with the appendix thereto. The boxes shall be closed and strapped in accordance with the specification or appendix thereto. The gross weight of the triple-wall fiberboard box and the wood boxes shall not exceed 200 lbs. The gross weight of the PPP-B-636 box shall not exceed the weight limitations of the box specification.

5.2.2 Commercial. The padlocks shall be packed in accordance with ASTM D3951 to assure carrier acceptance, and safe arrival the destination.

5.3 Marking.

5.3.1 Civil agencies. In addition to markings required by the contract or order, the interior packaging and shipping containers shall be marked in accordance with FED-STD-123.

5.3.2 Military agencies. In addition to markings required by the contract or order, the interior packaging and shipping containers shall be marked in accordance with MIL-STD-129.

6. NOTES

6.1 Intended use. The padlocks under this specification are intended for use as determined for low level resistance to forced entry and high level tell-tale manipulation or surreptitious action. The padlocks are intended for use ashore and aboard ocean going vessels, indoors, or outdoors, semi-protected by a structural overhang similar to eaves or a lean to.

Ordinarily surreptitious opening would be accomplished by drilling, or other physical or mechanical penetration or the forcing or prying out of component parts, and then restoring the lock to its apparent original condition by repairs.

6.4.3 Man-minutes. Time expended times the number of men engaged in the test.

6.4.4 Radiographic attack test. For the purpose of this specification the test specified in 4.6.3.3 is intended to simulate attempted radiographic attack on the padlock within the specification limits of time and equipment, utilizing practicable and feasible procedures and equipment available to Government testing agencies performing the test.

6.4.5 Normal use. For the purpose of this specification the term "normal use: is defined as dialing the combination and opening the padlock; withdrawing the shackle from the staple, ring, chain link, or other device; and relocking the padlock, with all exterior surfaces of the padlock exposed to both view and touch. Occasional dropping of the padlock is also expected.

6.5 Cross referrence of classifications.

FF-P-110F	FF-P-110G
Type DC	Deleted
Type DE	Type DE
Type PC	Deleted
Type PE	Deleted
Class 1	Class 1
Class 2.	Class 2

6.6 Changes from previous issue. Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

MILITARY INTEREST:

Custodians

Army - GL
Navy - YD
Air Force - 99

Review activities

Army - AR, AV, CE
Air Force - 82
DLA - IS

User activities

Navy - OS, SH, MC, CG

CIVIL AGENCY COORDINATING ACTIVITIES:

GSA-7FXE

PREPARING ACTIVITY:

Navy - YD

(DOD Project 5340-1709)

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.